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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/813,140

Applicant(s)

KEPPLINGER ET AL.

Examiner

Kathleen A. McNelis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Claims Status***

Claims 1-39 remain for examination.

***Acknowledgement of RCE***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.115, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 29 November 2005 has been entered.

***Status of Previous Rejections***

The rejection of claims 1 to 39 under 35 USC § 112, first paragraph is maintained.

The rejection of claim 4 under USC § 112, second paragraph is maintained.

The rejection of claims 1 to 39 under 35 USC § 103 is withdrawn.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 to 39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement for the reasons provided in the June 7, 2005 office action. The claim(s) contains subject matter which was not described in the

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specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In Claim 4, the phrase “and a maximum preheating temperature with respect to the avoidance of magnetite formation” fails to define the conditions or steps required to effectively avoid the formation of magnetite. Claim 4 already contains the limitations of 1) a maximum reduction speed of less than 0.2% oxygen removal per minute, and 2) conditioning the reducing gas so that no reduction to hardly any reduction takes place. The thermodynamic diagram supports the latter limitation, and also indicates that at any temperature between 300 and 1300 °C, magnetite is thermodynamically stable when CO and hydrogen exceed 0%. If there are temperatures below which magnetite will not form during preheating in a reducing environment, they should be clearly stated and the specification should provide enablement for meeting these limitations. Otherwise, the phrase “and a maximum preheating temperature with respect to the avoidance of magnetite formation” does not further limit claim 4. For examination purposes it was assumed that this limitation is met by operating the preheating reactor by any means that avoids magnetite formation.

In addition, the meaning of the limitation in claims 15 and 16 “a respective temperature level which is lower as compared with the unaffected heating exchange is adjusted” is unclear. The disclosure in specification page 5, lines 25-29 seems to link the unaffected heat exchange temperature with a high preheat temperature, but does not further clarify the meaning. For examination purposes, it is assumed that this

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limitation means that the temperature in the second particulate reaction zone is lower than the temperature in the preheating zone.

The meaning of a "vapor/carbon ratio" in claim 38 is unclear. The disclosure does not clarify what is included in "vapor" or "carbon". For purposes of examination, it was assumed that vapor is referring to water vapor and carbon to carbonaceous gaseous components.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4, 15 and 16 are rejected under 35 U.S.C. 112, second paragraph for the reasons provided in the June 7, 2005 office action.

Claim 4 recites the limitation "0.2 % oxygen removal." There is insufficient antecedent basis for this limitation in the claim. The disclosure is related to removal of oxygen from iron ore, yet claim 4 does not disclose iron ore, only a "metal-containing particulate material". Further, in this process there could be a number of oxygen sources that affect reduction. The claim must make clear which source(s) of oxygen is/are removed at this rate. For examination purposes, it was assumed that the reference was specific to oxygen bound to iron in ore.

Claim 4 recites the limitation "avoidance of magnetite formation." There is insufficient antecedent basis for this limitation in the claim. The disclosure is related to removal of oxygen from iron ore, yet claim 4 does not disclose iron ore, only a "particulate material". For examination purposes, it was assumed the reference was specific to magnetite formation from iron ore.

In addition, Claims 15 and 16 recite the limitation "the unaffected heating exchange." There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-10, 15, 16, 29-32, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whipp (U.S. Pat. No. 5,082,251).

With respect to claim 4, Whipp discloses a process for reducing raw iron ore fines in a multi-stage fluidized bed reactor process (abstract) wherein the fluidized bed reactors are arranged consecutively in series (figure 1). Iron ore fines form a fluidized bed (col. 8 lines 1-6), which is the same as "moving particulate material" in claim 4. The iron ore particulate moves consecutively downward by gravity through a series of reduction zones increasing in metallization or purity as they pass downward from reactor to reactor. The reducing gas passes upward through the same reactors counter current to the iron ore particulate (col. 11 lines 47-68). The "first particulate pathway reaction zone" in claim 4 is referred to in Whipp as the "preheat reactor process", the function of which is to heat the ore to reaction temperature and remove hydrated water, and some phosphorus and sulfur from the ore (col. 8 line 67- col. 9 line 5). Each "further particulate pathway reaction zone consecutively in the series" (instant claim 4) consists of a group of 3 reactors in Whipp which is referred to as "reducing reactor assembly", the function of which is removal of oxygen from the iron ore fines (i.e. reduction; col. 11 lines 46-57). Reducing gas is conditioned by adjusting the air to gas ratio in the preheating step such that there is about 2% oxygen in the flue gas (col. 9 lines 1-19), which is the same as "increasing the degree of oxidization of the reducing gas" in instant claim 4.

Whipp provides "State Tables" that represent a compilation of states of the various flow groups throughout the plant (col. 21 – 24). In this table, ore from the pre-

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heat reactor is shown to contain no magnetite (value of zero for  $\text{Fe}_3\text{O}_4$ ), or wuestite (value of zero for  $\text{FeO}$ ) and no metallization (state tables, col. 23). These results indicate that no reduction to hardly any reduction occurred in the first particulate pathway reaction zone (pre-heat) as in instant claim 4. Further, the temperature of gases leaving this zone is given to be 750 °C (state tables cols. 22 and 24), a temperature at which reduction would be expected to occur in a reducing atmosphere.

While Whipp does not specifically state that the maximum maintained reduction speed is 0.2% oxygen removal per minute as claimed, the state tables (cols. 22-24) demonstrate that little to no reduction of the iron has occurred, therefore little to no oxygen bound to iron has been removed and the reduction rate is effectively less than 0.2% oxygen removal per minute. It would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the process of Whipp such that less than 0.2% oxygen would be removed per minute in the preheat reactor so that no reduction of iron or would occur during preheating as shown in the State Tables for the ore from the preheat reactor (col. 23).

With respect to claims 1-3, the "second particulate pathway reactor zone" in instant claim 1 is the same as the "top reducing reactor" in Whipp. The gas temperature exiting this reactor is 690 °C (State Tables bottom of col. 22 to top of col. 24). The ore exiting this zone contains 91.6 % wuestite ( $\text{FeO}$ ) and zero percent magenetite ( $\text{Fe}_3\text{O}_4$ ) (State Tables, col. 23, "from Preheat Reactor") as in instant claim 1. The exit gas temperature of 690 °C is within the range of at least 600 °C (claim 1), within the range of between 600 °C and 700 °C (claim 2) and close to the range of between 620 °C and



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660 °C (claim 3). It has been well settled that where claimed ranges and prior art ranges do not overlap but lie close enough that one of ordinary skill in the art would expect the same properties to result, a prima facie case of obviousness exists (M.P.E.P. § 2144.05).

With respect to claim 5, while Whipp does not specifically disclose a maximum oxygen removal rate from ore of 0.05% per minute, Whipp provides data indicating that no significant amount of ore reduction occurs in the first reaction zone (preheat zone) as described above regarding claim 4. This indicates that the rate of oxygen removal from ore is low to zero, which is consistent with a maximum removal rate of no more than 0.05% per minute. It would have been obvious to one of ordinary skill in the art at the time the invention was made to operate the process of Whipp such that less than 0.05 % oxygen would be removed per minute in the preheat reactor so that no reduction of iron or would occur during preheating as shown in the State Tables for the ore from the preheat reactor (col. 23).

With respect to claim 6, iron ore is the particulate material as described above regarding claim 4.

With respect to claims 7 and 8, natural gas is injected into the fluid bed and combusted in the presence of excess oxygen in Whipp (col. 9 lines 1-19). Natural gas is combusted thereby using the gas the caloric content is used to adjust temperature as in instant claims 7 and 8. As described above regarding claims 1 and 4, the temperature of the gas exiting the preheat reactor is high enough that reduction would be expected in a reducing environment. However, the degree of oxidation of the

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reducing gas is increase in the preheating zone ("first particulate pathway reaction zone") as described above regarding claim 4, and as the State Tables indicate, no reduction to hardly any reduction occurs.

With respect to claims 9 and 10, Whipp discloses a process for reducing iron oxide wherein iron ore particulate is introduced to a first reaction zone for preheating to reaction temperature as described above regarding claim 4. Gases pass the particulates countercurrently, moving from the "lower beds" to the preheating zone whereas particulates pass from the preheating zone downward as described above regarding claim 4. In this way, reducing gases are fed into the zone where the purest reducing gas is most necessary (col. 3 lines 1-10) and increasing the degree of oxidation in the preheating zone would not influence the gases upstream in the final reduction zone.

With respect to claims 15 and 16, the gas temperature exiting the second particulate pathway reaction zone is approximately 690 ° C as discussed above regarding claim 1, which is lower than the temperature of the gas exiting the preheating zone at approximately 750 ° C as discussed above regarding claim 4.

With respect to claims 29 and 30, the gas temperature exiting the last one of the particulate pathway reaction zones ("bottom reducing reactor" in Whipp) is 765 ° C (State Tables, col. 22 bottom to col. 24 top, "bottom reducing reactor") which is within the claimed range of between 760 and 850 ° C.

With respect to claims 31 and 32, the degree of oxidation is adjusted by introducing reducing gas (411) into the lower-most reactor (407; col. 11 lines 30-46),

which is the same as “varying the degree of oxidation of fresh reducing gas introducing into one of the particulate pathway zones” in instant claims 1-10. The reducing gas enters the second particulate reducing zone (427) and reduces ore to wuestite State Tables col. 23 “From Top Reducing Reactor”, FeO).

With respect to claim 37, the CO content of the gas exiting the preheat reactor has 0% CO (State Tables, bottom of col. 22 to col. 24, gas exiting preheat reactor). The reducing gas exiting each subsequent reducing reactor has CO contents of 6.3%, 7.85% and 8.54% CO respectively (State tables col. 22 and 23). 0%, 6.3%, 7.85% and 8.54% are within the claimed range of under 20%.

With respect to claim 38, the ratio of water vapor to CO<sub>2</sub> in the gas exiting the first particulate pathway reactor is 30.75/8 (State Tables cols. 22 and 24) or 3.84, which is within the claimed range of between 2.5 and 5.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whipp as applied to claims 4 and 1 above, and further in view of Meissner et al (U.S. Pat. No. 6,488,770).

Whipp discloses a process for reducing iron oxide wherein iron ore particulate is introduced to a first reaction zone for preheating to reaction temperature as described above regarding claim 4. With respect to claims 11 and 12, Whipp discloses a process for reductive treatment of iron ore fines of under ½ inch (< 12.7 mm; col. 4 lines 16-33). The range of less than 12.7 mm overlaps with the claimed range of up to 12 mm. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use particles less than 12 mm in diameter in the process of Whipp, since

Whipp teaches that fines less than ½" (12.7 mm) are suitable for this reduction process (col. 4 lines 16-44).

Whipp does not teach that the particulate is in the form of monograins or grain strips.

Meissner et al. discloses a monocrystalline powder and monograin membranes produced from powders. Meissner et al. teaches that the powders are simply and inexpensively produced to a uniform size (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to treat monocrystalline or monograin powder as taught by Meissner et al. in the fluidized bed reduction process of Whipp, since the powder can be simply and inexpensively produced to a uniform size as taught by Meissner et al.

Claims 13, 14, 17, 18, 23-26 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whipp as applied to claims 4 and 1 above, and further in view of Hillisch et al., (Steel Times International, March 2001, pp. 20 and 22).

Whipp discloses a process for reducing iron oxide wherein iron ore particulate is introduced to a first reaction zone for preheating to reaction temperature as described above regarding claim 4. No reduction to hardly any reduction of iron oxide occurs in the first particulate reaction zone due to increasing the oxidation degree of the gas as described above regarding claim 4. In the second particulate reaction zone, iron is oxidized to wuestite and the temperature is higher than 600 °C as described above regarding claim 1.

Whipp does not disclose that the temperature in the first particulate pathway reaction zone is between 350 and 550 °C as in instant claims 13 and 14, or that water is injected to adjust the temperature as in instant claims 17 and 18.

Hillisch et al. disclose a process for reduction of ore in a series of fluidized bed reactors, wherein particulate ore is introduced to a first reaction zone and moves by gravity to subsequent zones for reduction (p. 20). Hillisch et al. discloses that lowering the temperature in the first particulate pathway reaction zone to approximately 400 °C slows reaction kinetics for topical magnetite formation and thus alleviates problems including sticking and blockage during material transfer from reactor to reactor (p.22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to reduce the temperature in the first particulate reaction zone to approximately 400 °C as taught by Hillisch et al. in the fluidized bed reduction process of Whipp to alleviate problems including sticking and blockage during material transfer from reactor to reactor as taught by Hillisch et al. The temperature of approximately 400 °C is within the claimed range of 350 and 550 °C as in instant claims 13 and 14. With respect to claims 17 and 18, Hillisch et al. disclose that water is injected for cooling (p.22).

With respect to claims 23, 24, and 39 Hillisch et al teaches the injection of water for cooling as described above regarding claims 17 and 18. While Hillisch et al. does not state that the cooling can be performed when the supply of metal containing particulate material is interrupted as in instant claim 39, it would have been obvious to one of ordinary skill in the art at the time the invention was made to maintain the

temperature at approximately 400 °C as described above regarding claims 17 and 18 when the supply of metal containing particulate material is interrupted.

With respect to claims 25 and 26, Hillisch et al teaches the injection of water for cooling as described above regarding claims 17 and 18. Further, Whipp teaches that the degree of oxidation of the reducing gas is adjusted to approximately 2% O<sub>2</sub> (col. 9 lines 1-20).

Claims 13, 14, 19-22 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whipp ('251) as applied to claims 4 and 1 above, and further in view of Zeller et al. (U.S. Pat. No. 6,569,377).

Whipp ('251) discloses a process for reducing iron oxide wherein iron ore particulate is introduced to a first reaction zone for preheating to reaction temperature as described above regarding claim 4. No reduction of iron oxide occurs in the first particulate reaction zone due to increasing the oxidation degree of the gas as described above regarding claim 4. In the second particulate reaction zone, iron is oxidized to wuestite and the temperature is higher than 600 °C as described above regarding claim 1.

Whipp does not disclose that the temperature in the first particulate pathway reaction zone is between 350 and 550 °C as in instant claims 13 and 14, or that cold gas is injected to adjust the temperature as in instant claims 19 and 21 or that the cold gas is a reducing gas as in instant claims 20 and 22.

Zeller et al. discloses a process for direct reduction of particulate iron oxide in a multiple reactor fluidized bed reduction process where several fluidized bed zones are

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arranged in series (abstract). Zeller et al. discloses an improved operating process wherein the formation of magnetite is avoided and energy use is less than prior art processes (cols 1-2). Zeller et al. teaches cooling the temperature in the first fluidized bed zone to below 400 °C by cooling the reducing gas feed to the first reaction zone (col. 3 lines 26-59). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use cooled reduction gas as taught by Zeller et al. in the fluidized bed reduction process of Whipp to lower utility consumption while preventing magnetite formation as taught by Zeller et al.

With respect to claims 33 and 34, Whipp discloses that the reducing gas emerging from the second particulate pathway (429) is quenched (603) and scrubbed (604; col. 16 lines 36-59). Zeller et al. teaches that a portion of the gas is recycled from the second particulate pathway reactor to the first particulate pathway reactor (Figs. 2-6, and 8, (19)).

With respect to claims 35 and 36, Zeller et al. teaches that gases removed (8) from the first particulate pathway reactor is mixed with reformed gas (13), scrubbed (16) and used as reducing gas feed (17; col. 6 lines 13-27). This gas travels upwards through the reaction zones back into the first zone (19, Fig 1).

Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whipp ('251) as applied to claims 4 and 1 above, and further in view of Whipp (U.S. Pat. No. 5,531,424).

Whipp ('251) discloses a process for reducing iron oxide wherein iron ore particulate is introduced to a first reaction zone for preheating to reaction temperature as described above regarding claim 4.

Whipp ('251) does not teach that the average retention time in the first particulate pathway reaction zone is up to 40 minutes.

Whipp ('424) discloses a process for direct reduction in a fluidized bed process (abstract) wherein ore is preheated. Whipp teaches that the residence time required is based on the time required from heat transfer from gas to solids (col. 1 lines 60-66). Residence time is therefore recognized as result-effective variables in the art, which is varied to affect the solids temperature. It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the residence time as result-effective variables to affect the solids temperature (see M.P.E.P 2144.05, II, B).

### ***Response to Arguments***

Applicant's arguments filed November 29, 2005 have been fully considered but they are not persuasive.

Applicant's arguments are summarized as follows:

1. The disclosure enables the claimed language "with respect to the avoidance of magnetite formation" by Figure 2.
2. There is antecedent basis for the use of "oxygen" and "magnetite" in claim 4.
3. Zeller et al. does not disclose the limitation of heating to reducing temperatures but avoiding reduction or reducing only a minor amount in the first reactor.

Examiner's response to these arguments are as follows:



1. Figure 2 is a thermodynamic diagram. Applicant acknowledges that this diagram does not reveal kinetic mechanisms or limitations in forming magnetite as stated in specification p. 10 lines 12-18. Using this diagram for a starting material of hematite in an oxidizing atmosphere (right-hand-side axis), it appears that magnetite will be thermodynamically stable at any temperature between 300 and 1300 °C when the CO and H<sub>2</sub> contents exceed zero. This is not suggestive of a maximum preheating temperature to avoid magnetite formation.
2. The rejection of claim 4 under the second paragraph of section 112 is for lack of antecedent basis for oxygen and magnetite in the claims. The specification teaches reduction of iron ore, wherein the oxygen is removed from the ore and magnetite can form from the ore during reduction. The language in claim 4 is much more broad and uses the term "metal containing particulate" in place of iron ore. Therefore, there is no antecedent basis for "oxygen" or "magnetite" since claim 4 does not contain the limitation of a metal oxide that is being reduced or an iron oxide that could be reduced to magnetite.
3. Applicant's arguments with respect to claims 1-39 under 35 U.S.C. 103 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kathleen A. McNelis whose telephone number is 571-272-3554. The examiner can normally be reached on M-F 8:00 AM to 4:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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